SDMS#247899

SITE ASSESSMENT REPORT
WESTERN FORGE WORKS SITE
EAST ST. LOUIS, ST. CLAIR COUNTY, ILLINOIS

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch
C/O Crab Orchard National Wildlife Refuge
8588 Route 148
Marion, IL 62959

TDD No.:	S05-0104-017
Date Prepared:	14 Jun 01
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
START Project Manager:	Joseph M. Parish
Telephone No.:	(314) 892-6322
U.S. EPA On-Scene Coordinator:	Kevin Turner
Telephone No.:	(618) 997-0115

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FIGURES

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1.0 INTRODUCTION

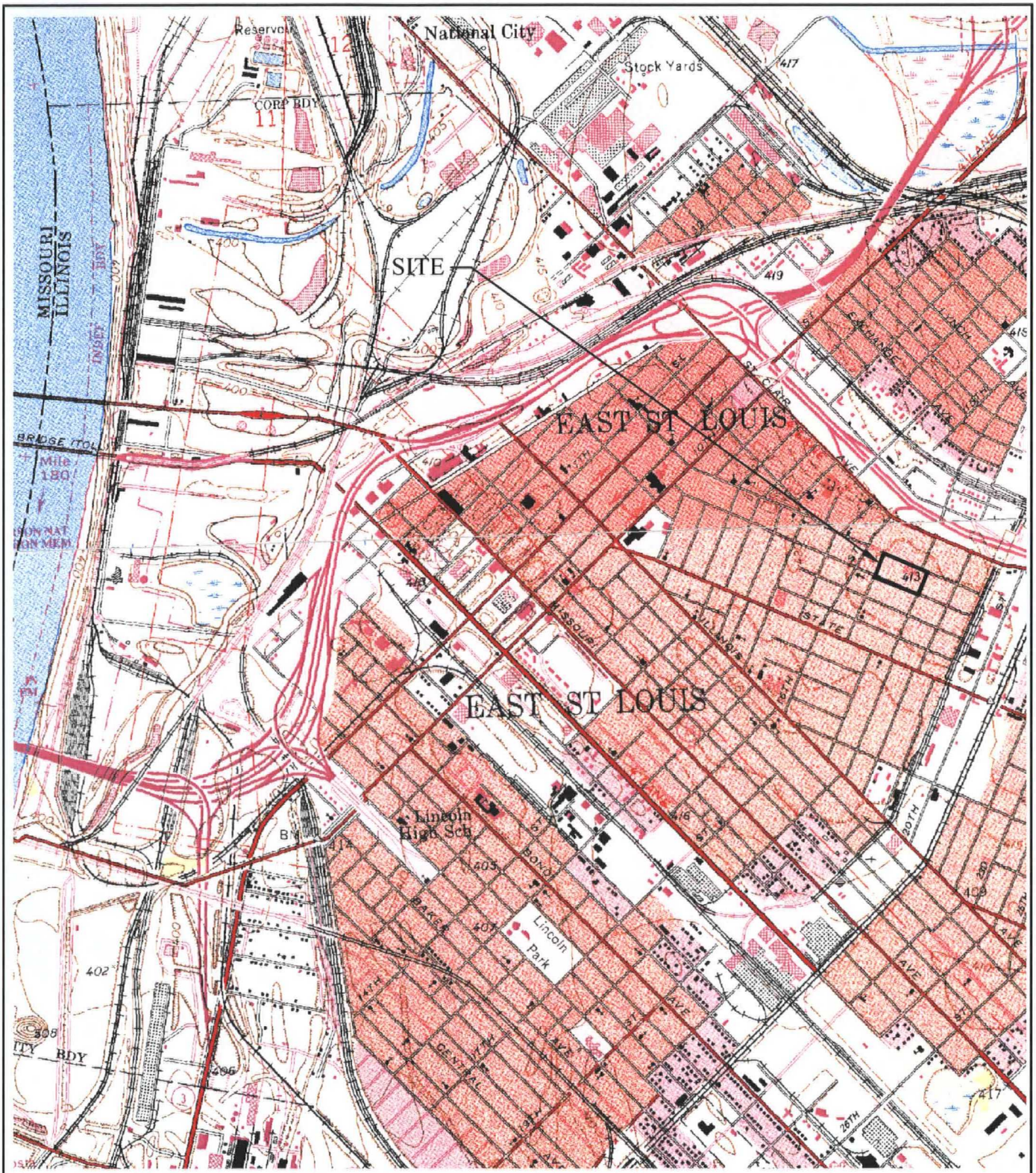
The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) has prepared this site assessment report in accordance with the requirements of Technical Direction Document (TDD) No. S05-0104-017, which the U.S. Environmental Protection Agency (U.S. EPA) assigned to START. The scope of this TDD was to conduct site assessment activities at the Western Forge Works site in East St. Louis, St. Clair County, Illinois. START was tasked to conduct a site assessment, which involved soil sample collection to delineate the extent of contamination, documentation of on-site activities, including photodocumentation (see Appendix A), analytical data validation (see Appendix B), and preparation of a site assessment report. This site assessment report discusses the site background, site assessment activities, analytical results, and potential site-related threats, and presents a summary.

2.0 SITE BACKGROUND

The Western Forge Works site is located on the south side of St. Clair Avenue between 16th and 18th Streets in East St. Louis, Illinois, at latitude 38° 37'28.5" North and longitude 90° 08'11" West (see Figure 1). The site is located in a mixed residential and commercial area. An elementary school is located south of the site, which is bordered by residences on all sides and a daycare center to the west (see Figure 2). The owners of the site since 1992 are Clifton and Regina Moore, who reside at 3700 State Street in East St. Louis, Illinois.

The site is the former location of Western Forge Works, a metal forging business formerly located in the abandoned lot east of the daycare center. No other information has been provided concerning the site's operating history. The site is being investigated by U.S. EPA Region 5 at the request of the Illinois Department of Public Health (IDPH) under the Mississippi Gateway Initiative Lead Grant to determine whether site-related contaminants pose a threat to human health or the environment as part of an ongoing effort to identify and remediate Brownfield properties in major metropolitan areas.

The IDPH performed a site investigation in 1999 that included limited sampling for total lead. Investigation results showed lead contamination in the soil as high as 761 parts per million (ppm) on site and as high as 1,217 ppm at a residence along 16th Street (see the figure in Appendix C).



0 1000 2000

SCALE IN FEET

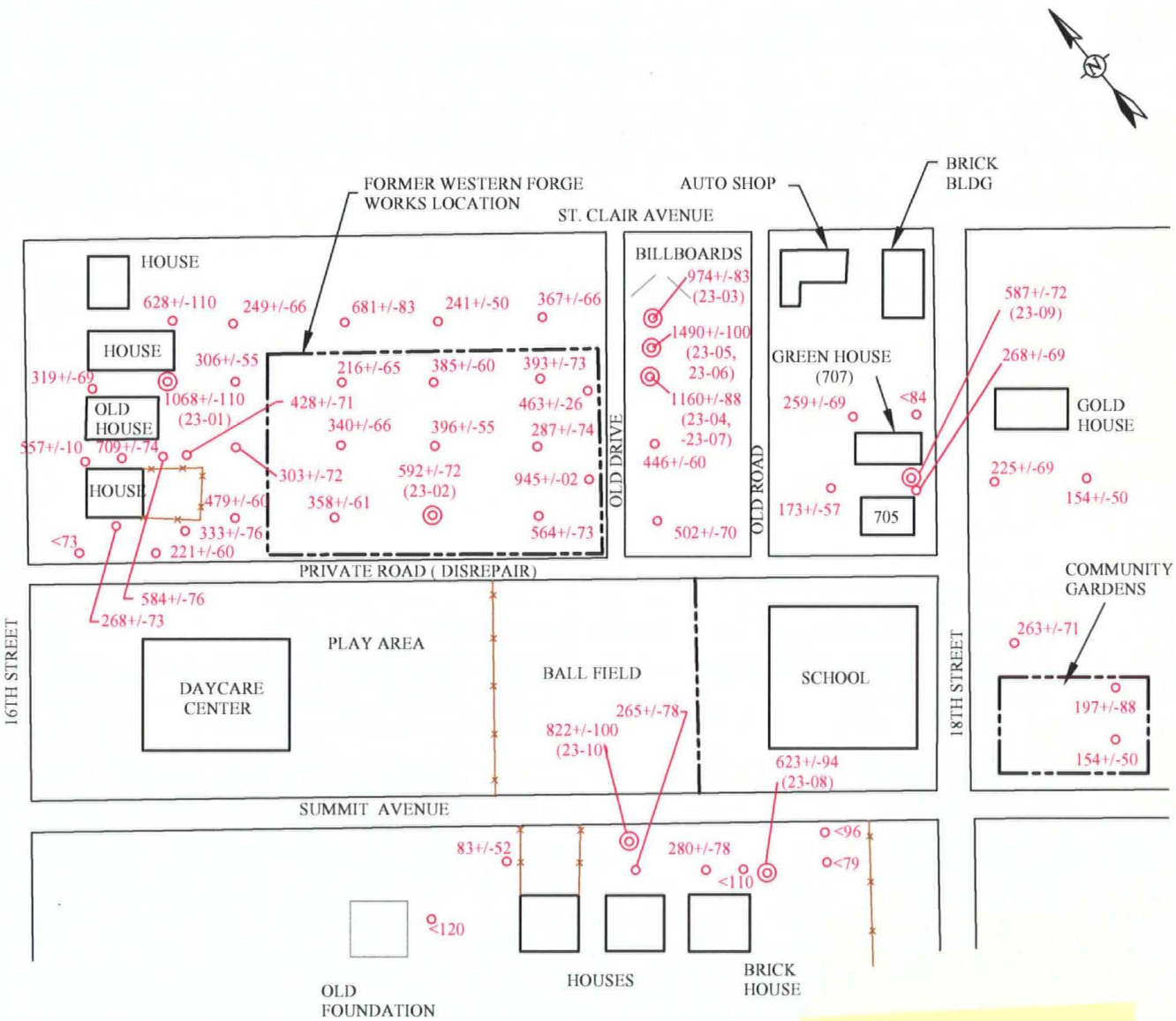
WESTERN FORGE WORKS SITE
EAST ST. LOUIS, ILLINOIS
TDD NO: S05-0104-017

FIGURE 1
SITE LOCATION MAP

PREPARED FOR: EPA

BY: Tetra Tech EM Inc.

SOURCE: MODIFIED FROM USGS, GRANITE CITY AND CAHOKIA, ILLINOIS-MISSOURI, QUADRANGLES, 1993.



Mike... I have some issue with how START drew this map. --- Kevin

LEGEND

108+/-56 SURFACE SOIL XRF RESULT IN PPM LEAD (+/- 95 PERCENT CONFIDENCE LIMIT)

SAMPLING LOCATION FOR LABORATORY ANALYSIS

STRUCTURE

APPROXIMATE SITE BOUNDARY

FENCE

NOT TO SCALE

WESTERN FORGE WORKS SITE
EAST ST. LOUIS, ILLINOIS
TDD NO: S05-0104-017

FIGURE 2
SITE FEATURES AND
SAMPLING LOCATION MAP

PREPARED FOR: EPA

BY: Tetra Tech EM Inc.

3.0 SITE ASSESSMENT ACTIVITIES

Site assessment activities were conducted at the Western Forge Works site on 24 and 25 Apr 01. START met with U.S. EPA personnel at the site on 24 Apr 01. The START field crew consisted of Joe Parish, Art Currier, Brian Schlieger, and Jason Massey from Tetra Tech, and Keith Hughes from Project Resources, Inc. (PR). U.S. EPA on-scene coordinators (OSC) included Kevin Turner, Mike Harris, and Tom Cook.

START was tasked to document site conditions, collect soil samples, and prepare and submit samples for laboratory analysis. PR was tasked to screen the site with a NITON™ x-ray fluorescent (XRF) spectrometer.

The site was marked into a loose grid, and potentially sensitive areas identified by the OSC for sampling were indicated using survey flags or marking paint. During the 2 days of this investigation, XRF spectrometer readings (with 95 percent upper and lower confidence limits) were taken at each grid location (approximately every 30 to 50 feet) and at marked or flagged locations on bare soil that had been cleared of vegetation and humus. Off-site locations at sensitive areas, such as residential yards, were also chosen by the OSC for sampling, flagged or marked, and screened using the XRF spectrometer.

XRF spectrometer readings for lead were compared with the U.S. EPA Region 9 preliminary remediation goal (PRG) for residential soil. The guidelines below were generally followed, but the samples submitted for laboratory analysis and parameters analyzed for were chosen by the OSC. Locations where XRF spectrometer readings for lead exceeded the PRG of 400 milligrams per kilogram (mg/kg) were marked as potential sampling points for laboratory analysis of Resource Conservation and Recovery Act (RCRA) metals (see Figure 2). Locations where XRF spectrometer readings exceeded 1,000 ppm for lead were marked for auger sampling to a depth of 24 inches below ground surface (bgs). At sampling locations 023-04 and 023-05, soil samples were screened with the XRF spectrometer at increments of 6 inches. Screened samples that had contained the highest lead levels (samples 023-06 and 023-07) were analyzed for RCRA metals, toxicity characteristic leaching procedure (TCLP) lead, polychlorinated biphenyls (PCB), semivolatile organic compounds (SVOC), volatile organic compounds (VOC), and pH.

On 25 Apr 01, samples were collected using a stainless-steel auger and homogenized in pie pans for field screening at the ground surface and in increments of 6 inches down to 12 inches bgs at the locations shown in Figure 2. The auger was decontaminated after collection of each sample using Alconox and

water with a final, deionized water rinse. Selected samples were placed in sample containers and submitted for laboratory analysis based on the field screening results and at the discretion of the OSC. Based on field screening results, no samples were collected from below 6 inches bgs. XRF readings and sampling locations are summarized in Table 1 and shown in Figure 2. Site assessment field work was completed on 25 Apr 01. Samples were stored on ice and submitted to the Environmetrics, Inc., laboratory in St. Louis, Missouri, on 27 Apr 01.

TABLE 1
SAMPLING SUMMARY

Sampling Date	Time	Sample No.	XRF Spectrometer Reading (ppm)	Description	Requested Analyses
25 Apr 01	1130	023-01	1,068 +/- 110	Surface	RCRA metals
25 Apr 01	1140	023-02	592 +/-72	Surface	RCRA metals
25 Apr 01	1700	023-03	974 +/-83	Surface	RCRA metals
25 Apr 01	1710	023-04	1,160 +/-88	Surface	RCRA metals
25 Apr 01	1711	023-05	1,490 +/-100	Surface	RCRA metals
25 Apr 01	1717	023-06	4,330 +/-220	0-6 inches bgs at sample No. 023-05 location	RCRA metals, TCLP lead, SVOCs, VOCs, PCB, and pH
25April 01	UK	NS	157 +/-52	6-12 inches bgs at sample No. 023-05 location	NS
25 Apr 01	1740	023-07	2,760 +/-170	0-6 inches bgs at sample No. 023-04 location	RCRA metals, TCLP lead, SVOCs, VOCs, and pH
25April 01	UK	NS	511 +/-84	6-12 inches bgs at sample No. 023-04 location	NS
25 Apr 01	1847	023-08	623 +/-94	Surface	RCRA metals
25 Apr 01	1850	023-09	587 +/-72	Surface	RCRA metals
25 Apr 01	1900	023-10	822 +/-100	Surface	RCRA metals

Notes:

+/- = Indicates 95 percent confidence limit for XRF spectrometer reading
bgs = Below ground surface
NS = No sample submitted for analysis
PCB = Polychlorinated biphenyl
ppm = Part per million
RCRA = Resource Conservation and Recovery Act
SVOC = Semivolatile organic compound
TCLP = Toxicity characteristic leaching procedure
UK = Unknown
VOC = Volatile organic compound
XRF = X-ray fluorescent

4.0 ANALYTICAL AND FIELD SCREENING RESULTS

All samples were analyzed for RCRA metals, and selected samples were analyzed for TCLP lead, pH, VOCs, SVOCs, and PCBs as indicated in Table 1. Samples were selected for TCLP lead, pH, VOC, SVOC, and PCB analyses based on high lead field screening values and at the discretion of the OSC. Table 2 summarizes the detected analytical data corrected to dry weight. The laboratory data were compared to the U.S. EPA Region 9 PRG tables for residential soil.

The analytical data confirm the field screening data finding that elevated levels of lead are present on site and in the site area at concentrations above the PRG of 400 mg/kg . The maximum lead concentration detected is 5,720 mg/kg. Although the lead levels exceed the PRG, the TCLP results for lead were well below the regulatory level of 5 milligrams per liter (mg/L) for the two samples analyzed (see Table 2).

As indicated in Table 2, several other compounds exceeded the U.S. EPA Region 9 PRGs for residential soil. These included arsenic, the polycyclic aromatic hydrocarbons (PAH) benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, indeno (1,2,3-cd) pyrene, and dibenz(a,h)anthracene at maximum levels of 3.3, 3.8, 3.2, 0.96J and 0.36J mg/kg, respectively. PAHs, although they have no practical use, are associated with the incineration of organics, a common practice in industrial areas. All of the above PAHs are considered carcinogenic. The arsenic concentrations in all samples submitted exceeded the cancer endpoint PRG of 0.39 mg/kg, but was below the noncancer PRG of 22 mg/kg. Trace amounts of other SVOCs and VOCs were detected at less than 1 mg/kg, but no concentrations exceeded PRGs. The soil was slightly alkaline, having a pH of 7.19 to 7.59 standard units (SU), which is unremarkable. These results are consistent with industrial areas.

XRF screening results show that at 17 out of 34 screened points (50 percent) at the former metal forging property and at adjacent properties from 16th Street to the west, "old road" to the east, St. Clair Avenue to the north, and "private road" to the south, the 400-mg/kg PRG for lead was exceeded. Only 3 out of 19 screened points outside these boundaries exceeded the PRG (see Figure 2). These results suggest that the contaminant source is near the site location and that contaminant migration has occurred, but it cannot be

TABLE 2

ANALYTICAL RESULTS SUMMARY

Analyte	Sample No.[a,b]									
	023-01	023-02	023-03	023-04	023-05	023-06	023-07	023-08	023-09	023-10
Total Arsenic	9.93J	11.5J	10.6J	10.3J	14.2J	10J	13.9J	7.92J	5.67J	4.13J
Total Barium	277	269	231	202	350	344	345	203	115	206
Total Cadmium	3.82J	1 86J	3 84J	5.23	4 14	2.79J	4 2	3.71J	3 19J	6 38
Total Chromium	16 5	25.1	13 4	141	12.2	9 09	15 3	21.8	16 9	9 37
Total Lead	2,513	1,083	804	890	5,720	3,696	3,983	515	603	1,150
TCLP Lead	NA	NA	NA	NA	NA	1 9 mg/L	1 6 mg/L	NA	NA	NA
Total Mercury	0.7	0 7	1 8	0 3	0 6	0 7	2 3	0.2	0.5	0 6
Total Selenium	<4 7	<4 7	<4.7	8 77B	<4 7	<4.7	<4 7	<4 7	9 54B	<4 7
Total Silver	<0 6	<0- 6	<0 6	<0 6	<0 6	<0 6	<0 6	0 777B	<0 6	<0.6
pH	NA	NA	NA	NA	NA	7 19 SU	7 59 SU	NA	NA	NA
PCBs	NA	NA	NA	NA	NA	<0 039	NA	NA	NA	NA
Trichlorofluoromethane	NA	NA	NA	NA	NA	0 0092J	0 0055J	NA	NA	NA
Acetone	NA	NA	NA	NA	NA	0 140J	0.036J	NA	NA	NA
Methylene Chloride	NA	NA	NA	NA	NA	0 110J	0.073J	NA	NA	NA
1,1,1-Trichloroethane	NA	NA	NA	NA	NA	0.020J	0.014J	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	0 062J	0 060J	NA	NA	NA
Ethylbenzene	NA	NA	NA	NA	NA	0.0033J	0 0039J	NA	NA	NA
— and p-Xylenes	NA	NA	NA	NA	NA	0 0086J	0 011J	NA	NA	NA
o-Xylenes	NA	NA	NA	NA	NA	0 0035J	0 0045J	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	0.004J	0 0058J	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	0 410J	<4 38	NA	NA	NA
2-Methylnaphthalene[c]	NA	NA	NA	NA	NA	0 440J	<4 38	NA	NA	NA
Acenaphthylene	NA	NA	NA	NA	NA	0 320J	<4 38	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	0 760J	<4 38	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	0 460J	<4 38	NA	NA	NA
Phenanthrene[c]	NA	NA	NA	NA	NA	9.1	4.7	NA	NA	NA
Anthracene	NA	NA	NA	NA	NA	2 2J	1.0J	NA	NA	NA
Carbazole	NA	NA	NA	NA	NA	0 88J	<4 38	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	8 9	4 7	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	7 2	4 0J	NA	NA	NA
Benzo(a)anthracene	NA	NA	NA	NA	NA	3.3	1.8J	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	3 5	2.0J	NA	NA	NA

TABLE 2 (Continued)
ANALYTICAL RESULTS SUMMARY

Analyte	Sample No.[a,b]									
	023-01	023-02	023-03	023-04	023-05	023-06	023-07	023-08	023-09	023-10
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	3.8	2.1J	NA	NA	NA
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	1.8J	1.1J	NA	NA	NA
Benzo(a)pyrene	NA	NA	NA	NA	NA	3.2	1.7J	NA	NA	NA
Indeno(1,2,3-cd)pyrene[c]	NA	NA	NA	NA	NA	0.96J	0.51J	NA	NA	NA
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	0.36J	<4.38	NA	NA	NA
Benzo(g,h,i)perylene[c]	NA	NA	NA	NA	NA	0.94J	0.5J	NA	NA	NA

Notes:

< = Less than reported detection limit

J = Estimated value less than practical quantitation limit

mg/L = Milligram per liter

NA = Not analyzed

PCB = Polychlorinated biphenyl

PRG = Preliminary remediation goal

SU = Standard unit

TCLP = Toxicity characteristic leaching procedure

a All results are in milligrams per kilogram unless otherwise indicated.

b Shaded values exceed U.S. EPA Region 9 PRGs.

c No PRG established

proven that the site is the source of contamination because the highest concentrations of lead were detected along the site perimeter outside the site boundaries (see Figure 2). Field screening of samples at the perimeter of the site collected using stainless-steel augers to a depth of 12 inches bgs and analytical results for samples No. 023-06 and 023-07 from 6 inches bgs also suggest that contamination may not extend below 6 inches bgs. More data are needed to validate this conclusion.

5.0 POTENTIAL SITE-RELATED THREATS

Paragraph (b)(2) of Title 40 of the *Code of Federal Regulations* (40 CFR), Section 300.415, lists factors to be considered when determining the appropriateness of a potential removal action at a site. The discussion below summarizes the factors applicable to the Western Forge Works site and adjacent properties.

- **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants, or contaminants.** Residential properties as well as a school, a daycare facility, and businesses are located immediately adjacent to the site. In addition, a hospital is located within 1 mile of the site. The site is located within a densely populated major metropolitan area.

  During the investigation, START observed that the site has no fences, warning signs, or other barriers to prevent public access.

  Sampling at nearby residences, adjacent properties, and within the site boundaries shows levels of contamination above the U.S. EPA Region 9 residential soil PRGs for lead, arsenic, and PAHs as discussed in Section 4.0. Exposure pathways consist of (1) direct contact with contaminated soil and (2) inhalation of airborne contaminants through windblown particulates. Contaminant levels and locations also suggest potential contaminant migration through the runoff and air pathways. Because groundwater was not sampled, no conclusion can be drawn about the groundwater pathway from this investigation.

- **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate.** The East St. Louis area receives a substantial amount of precipitation (approximately 35 inches per year or more). Most precipitation occurs during Spring and Autumn. In addition, thunderstorms common during the Summer greatly accelerate erosion and runoff. All these conditions contribute to the potential for exposure and for contaminants to migrate off site.

- **The unavailability of other federal or state response mechanisms to respond to the release.** IDPH requested assistance from the U.S. EPA Region 5 under the Mississippi Gateway Initiative Lead Grant.

6.0 SUMMARY

The Western Forge Works site is located in a mixed residential and commercial area with nearby hospitals, schools, and a daycare center. The analytical results and field screening data indicate that approximately 50 percent of the site and properties immediately adjacent to the site contain soil with elevated lead concentrations exceeding the U.S. EPA PRGs for residential soils as discussed. Analytical results show that other compounds are present at concentrations exceeding their PRGs as well, but the extent of such contamination cannot be determined from site assessment data. Lead-contaminated soil present at various properties surrounding the site suggests that contamination is migrating off site. The data suggest that the source of contamination is near the site, but it cannot be proven that the site itself is the source. The site is not secure and is open to public access.

This investigation shows that the Western Forge Works site and adjacent properties pose a direct threat to human health and the environment and therefore meet the criteria for initiating a removal action as outlined in Paragraph (b)(2) of 40 CFR, Section 300.415, for the reasons discussed in Section 5.0.

APPENDIX A

PHOTOGRAPHIC LOG

(Two Pages)

Photograph No.: 1
TDD Number: S05-0104-017
Location: Western Forge Works
Subject: View across former site location toward residences along 16th Street

Orientation: Northwest
Date: 25 Apr 01

Photograph No.: 2
TDD Number: S05-0104-017
Location: Western Forge Works
Subject: View across former site location toward businesses and residences on east side

Orientation: Northeast
Date: 25 Apr 01

Photograph No.: 3 Orientation: East
TDD Number: S05-0104-017 Date: 25 Apr 01
Location: Western Forge Works
Subject: Western boundary of former site looking toward residences along 18th Street

APPENDIX B

VALIDATED ANALYTICAL RESULTS

(31 Sheets)

Tetra Tech EM Inc.

200 E. Randolph Drive, Suite 4700 ◆ Chicago, IL 60601 ◆ (312) 856-8700 ◆ FAX (312) 938-0118

MEMORANDUM

Date: 14 Jun 01

To: Joe Parish, Project Manager, Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) for Region 5

From: Harry Ellis, Chemist, Tetra Tech START for Region 5

Subject: Data Validation for
Western Forge Works Site
East St. Louis, Illinois
Analytical Technical Direction Document (TDD) No. S05-0104-023
Project TDD No. S05-0104-017

Laboratory: Ennvironmetrics, Inc. (Environmetrics), St. Louis, Missouri
Work Order No. 9912/5598
Volatile Organic Compound (VOC) Analysis of 2 Soil Samples, Semivolatile Organic Compound (SVOC) Analysis of 2 Soil Samples, Polychlorinated Biphenyl (PCB) Analysis of 1 Soil Sample, Total Metals Analysis of 10 Soil Samples, and Toxicity Characteristic Leaching Procedure (TCLP) Lead Analysis of 2 Soil Samples

1.0 INTRODUCTION

The Tetra Tech START for Region 5 validated VOC, SVOC, and TCLP lead analytical data for 2 soil samples, PCB analytical data for 1 soil sample, and total metals analytical data for 10 soil samples collected on 25 Apr 01 during a site assessment of the Western Forge Works site in East St. Louis, Illinois. The samples were analyzed under the above-referenced work orders by Environmetrics using U.S. Environmental Protection Agency (U.S. EPA) SW-846 Method 8260 for VOC analysis, SW-846 Method 8270 for SVOC analysis, SW-846 Method 8082 for PCB analysis, SW-846 Methods 6010 and 7471 for total metals analysis, and SW-846 Methods 1311 and 6010 for TCLP lead analysis.

The data were validated in general accordance with U.S. EPA's "Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated Oct 99 and "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" dated Feb 94. Organic data validation consisted of a review of the following quality control (QC) parameters: holding times, gas chromatograph/mass spectrometer (GC/MS) instrument performance check, initial and continuing calibrations, blank results, surrogate results, matrix spike and matrix spike duplicate (MS/MSD) sample results, laboratory control sample (LCS) results, internal standard results, and target compound identification. Inorganic data validation consisted of a review of the following QC parameters: holding times, initial and continuing calibrations, blank results, LCS results, and MS/MSD results.

Section 2.0 discusses the results of the organic data validation, Section 3.0 discusses the results of the inorganic data validation, and Section 4.0 presents an overall assessment of the data. The attachment to this memorandum contains Environmetric's summary of analytical results, including START's handwritten data qualifications where warranted.

2.0 ORGANIC DATA VALIDATION RESULTS

The results of START's data validation are summarized below in terms of the QC parameters reviewed. The data qualifiers below were applied to the sample analytical results as appropriate (see the attachment).

- UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
- J - The analyte was positively identified. The associated numerical value is the approximate concentration of the analyte in the sample.

2.1 HOLDING TIMES

All samples were analyzed within the established or recommended holding time limits of 14 days for VOCs, and 7 days to extraction and 40 days to analysis from extraction for SVOCs and PCBs.

2.2 GC/MS INSTRUMENT PERFORMANCE CHECK

The bromofluorobenzene instrument performance check met the QC abundance criteria for the VOC analyses. The decafluorotriphenylphosphine instrument check met the QC abundance criteria for the SVOC analyses.

2.3 INITIAL AND CONTINUING CALIBRATIONS

For the VOC and SVOC analyses, the relative standard deviation (RSD) from the initial calibration was within the QC limit of less than or equal to 30 percent for all target compounds. Many of the continuing calibration results for the VOC and SVOC analyses were within the QC limit of less than or equal to 25 percent difference (% D) between the initial calibration relative response factor and the continuing calibration relative response factor. However, the following VOCs had excessive %D results in the continuing calibration: chloromethane, bromomethane, methyl iodide, acrylonitrile, vinyl acetate, methyl-t-butyl ether, 2-butanone, carbon tetrachloride, 2-chloroethylvinyl ether, cis-1,3-dichloropropene, trans-1,3-dichloropropene, chlorodibromomethane, 1,2-dibromoethane, bromoform, 4-methyl-2-pentanone, 1,1,1,2-tetrachloroethane, trans-1,4-dichloro-2-butene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene. The SVOC compounds 2,4-dinitrophenol and benzidine also had excessive %D results in the continuing calibration. None of these compounds were detected in the investigative samples. The reporting limits are flagged "UJ" to indicate that they are estimates.

For the PCB analyses, all initial and continuing calibration results were within their respective QC limits.

2.4 BLANK RESULTS

For the VOC, SVOC, and PCB analyses, method blanks were run with the analytical batch and in the proper sequence. No target analytes were detected in the blanks at concentrations exceeding the instrument detection limit.

2.5 SURROGATE RESULTS

Recoveries for the surrogates were within the QC limits specified by the laboratory for the VOC and SVOC analyses. For the PCB analysis, recovery of the second surrogate, decachlorobiphenyl, was 216 percent, above the QC limits of 26 to 152 percent. Inspection of the chromatogram showed interference from nontarget compounds; therefore, no qualifications are warranted.

2.6 MS/MSD RESULTS

MS and MSD analyses were not performed on samples for VOC, SVOC, or PCB analysis.

2.7 LCS RESULTS

An LCS was analyzed along with the samples in each analytical group, and results were within the respective QC limits specified by the laboratory.

2.8 INTERNAL STANDARD RESULTS

For the SVOC analyses, the area counts for the internal standards were within the QC limits of -50 percent to +100 percent from the calibration standard. For both the VOC and SVOC analyses, the retention times of the internal standards were within the QC limit of ± 30 seconds. However, for the

VOC analyses, all internal standards had area counts below the lower QC limit. Re-analysis yielded very similar results. The reported data are from the reanalyses. Because surrogate recoveries, which are calculated from the internal standard areas, were within QC limits, the quantitative uncertainty from this interference probably is not excessive. All positive VOC results are flagged "J" to indicate that their concentrations are estimated. Some VOC and SVOC results were already flagged "J" by the laboratory because they are below the laboratory reporting limit, which corresponds to the lowest calibration standard. These results are not further qualified.

2.9 TARGET COMPOUND IDENTIFICATION

Mass spectra for detected VOCs and SVOCs in the samples matched those of the mass spectra for the standards. Nontarget SVOCs were also reported and appeared to be aromatic and alkylaromatic hydrocarbons similar in nature to the detected target compounds.

3.0 INORGANIC DATA VALIDATION RESULTS

The results of START's data validation are summarized below in terms of the QC parameters reviewed. The laboratory's qualifiers were modified to match those for the organic data.

3.1 HOLDING TIMES

All samples were analyzed within the holding time limits of 6 months for metals and 28 days for mercury.

3.2 INITIAL AND CONTINUING CALIBRATIONS

The recoveries during the initial and continuing calibrations were within the QC limits of 80 to 120 percent for mercury and 90 to 110 percent for all other metals.

3.3 BLANK RESULTS

Initial calibration blanks, continuing calibration blanks, and preparation blanks were run with each analytical batch. Iron and sodium were detected in the blanks above the laboratory reporting limits, but neither is a target metal for this project. No qualifications are warranted.

3.4 LCS RESULTS

An LCS was analyzed with each analytical batch. All LCS results were within QC limits specified by the laboratory.

3.5 MS/MSD RESULTS

MS and MSD analyses were not performed on samples for inorganic analysis.

4.0 OVERALL ASSESSMENT OF DATA

The overall quality of the data generated by Environmetrics is acceptable for use as qualified.

ATTACHMENT

ENVIRONMETRICS SUMMARY OF ANALYTICAL RESULTS

(23 Sheets)

ATTACHMENT

ENVIRONMETRICS SUMMARY OF ANALYTICAL RESULTS

(23 Sheets)

TETRA TECH EM, INC.
11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: O1LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-01
LAB ID: 9912005598-001
DATE COLLECTED: 04/25/01 16:30
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS		ANALYST
TOTAL ARSENIC	SW-846 6010A	9.93 ~~B~~ J	mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	277	mg/Kg	
TOTAL CADMIUM	SW-846 6010A	3.82 ~~B~~ J	mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	16.5	mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	2513	mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.7	mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U	mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U	mg/Kg	

III
HVS
11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

TETRA TECH EM, INC.
11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: O1LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-02
LAB ID: 9912005598-002
DATE COLLECTED: 04/25/01 16:40
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL ARSENIC	SW-846 6010A	11.5 B J mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	269 mg/Kg	
TOTAL CADMIUM	SW-846 6010A	1.86 B J mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	25.1 mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	1083 mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.7 mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U mg/Kg	

HE
11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

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11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: O1LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-03
LAB ID: 9912005598-003
DATE COLLECTED: 04/25/01 17:00
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS		ANALYST
TOTAL ARSENIC	SW-846 6010A	10.6 B J	mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	231	mg/Kg	
TOTAL CADMIUM	SW-846 6010A	3.84 B J	mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	13.4	mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	804	mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	1.8	mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U	mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U	mg/Kg	

HJS
11 Jun-01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: 01LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-04
LAB ID: 9912005598-004
DATE COLLECTED: 04/25/01 17:10
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL ARSENIC	SW-846 6010A	10.3 B J mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	202 mg/Kg	
TOTAL CADMIUM	SW-846 6010A	5.23 mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	141 mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	890 mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.3 mg/Kg	
TOTAL SELENIUM	SW-846 6010A	8.77 B J mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U mg/Kg	

Y @ F
11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: O1LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-05
LAB ID: 9912005598-005
DATE COLLECTED: 04/25/01 17:11
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL ARSENIC	SW-846 6010A	14.2 B J mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	350 mg/Kg	
TOTAL CADMIUM	SW-846 6010A	4.14 mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	12.2 mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	5720 mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.6 mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U mg/Kg	

HVE
11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: O1LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-06
LAB ID: 9912005598-006
DATE COLLECTED: 04/25/01 17:17
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS		ANALYST
TCLP LEAD	SW-846 1311/6010A	1.93	mg/L	05/07/01 J.T
TOTAL ARSENIC	SW-846 6010A	10 B J	mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	344	mg/Kg	
TOTAL CADMIUM	SW-846 6010A	2.79 B J	mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	9.09	mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	3696	mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.7	mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U	mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U	mg/Kg	
PH	SW-846 9045	7.190		05/01/01 M.U

FYE
11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
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ANALYSIS RESULTS

SAMPLE ID: 023-07
LAB ID: 9912005598-007
DATE COLLECTED: 04/25/01 17:40
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS		ANALYST
TCLP LEAD	SW-846 1311/6010A	1.57	mg/L	05/07/01 J.T
TOTAL ARSENIC	SW-846 6010A	13.9 B J	mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	345	mg/Kg	
TOTAL CADMIUM	SW-846 6010A	4.2	mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	15.3	mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	3983	mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	2.3	mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U	mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U	mg/Kg	
PH	SW-846 9045	7.590		05/01/01 M.U

11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: O1LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-08
LAB ID: 9912005598-008
DATE COLLECTED: 04/25/01 18:47
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL ARSENIC	SW-846 6010A	7.92 ~~B~~ J mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	203 mg/Kg	
TOTAL CADMIUM	SW-846 6010A	3.71 ~~B~~ J mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	21.8 mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	515 mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.2 mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U mg/Kg	
TOTAL SILVER	SW-846 6010A	0.777 ~~B~~ J mg/Kg	

11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PO: O1LG-P0029
PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-09
LAB ID: 9912005598-009
DATE COLLECTED: 04/25/01 18:50
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS	ANALYST
TOTAL ARSENIC	SW-846 6010A	5.67 ~~B~~ J mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	115 mg/Kg	
TOTAL CADMIUM	SW-846 6010A	3.19 ~~B~~ J mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	16.9 mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	603 mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.5 mg/Kg	
TOTAL SELENIUM	SW-846 6010A	9.54 ~~B~~ J mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U mg/Kg	

FIVE
11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

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PROJECT NO: G9009 L0104017, WESTERN FORGE

ANALYSIS RESULTS

SAMPLE ID: 023-10
LAB ID: 9912005598-010
DATE COLLECTED: 04/25/01 19:00
DATE RECEIVED: 04/27/01

TEST PERFORMED	METHOD OF ANALYSIS	RESULTS		ANALYST
TOTAL ARSENIC	SW-846 6010A	4.13 ~~B~~ J	mg/Kg	05/10/01 J.T
TOTAL BARIUM	SW-846 6010A	206	mg/Kg	
TOTAL CADMIUM	SW-846 6010A	6.38	mg/Kg	
TOTAL CHROMIUM	SW-846 6010A	9.37	mg/Kg	05/11/01 J.T
TOTAL LEAD	SW-846 6010A	1150	mg/Kg	05/10/01 J.T
TOTAL MERCURY	SW-846 7471A	0.6	mg/Kg	
TOTAL SELENIUM	SW-846 6010A	<4.7 U	mg/Kg	
TOTAL SILVER	SW-846 6010A	<0.6 U	mg/Kg	

TM
11 Jun 01

B = Reported value is greater than the Method Detection Limit (MDL) but less than the Practical Quantitation Limit (PQL).

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ST. LOUIS, MO 63123
ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
PO: O1LG-P0029

VOLATILE ORGANIC COMPOUNDS CAPILLARY COL
METHOD 8260IX
PAGE One

SAMPLE ID: 023-06
LAB ID: 9912/5598-006

	CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/Kg	RESULTS µg/Kg
(2)	75-71-8	Dichlorodifluoromethane	5	U
(2)	74-87-3	Chloromethane	10	U J
(2)	75-01-4	Vinyl chloride	5	U
(2)	74-83-9	Bromomethane	5	U J
(2)	75-00-3	Chloroethane	5	U
(2)	75-69-04	Trichlorofluoromethane	5	9.2 J
(2)	75-35-4	1,1-Dichloroethene	5	U
(2)	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5	U
(2)	67-64-1	Acetone	20	140 J
(2)	108-05-4	Vinyl Acetate	10	U J J
(2)	74-88-4	Methyl Iodide	5	U J
(2)	75-15-0	Carbon disulfide	10	U
(2)	107-05-1	Allyl Chloride	5	U
(2)	75-05-8	Acetonitrile	10	U
(2)	75-09-2	Methylene chloride	20	110 J
(2)	107-13-1	Acrylonitrile	10	U J J
(2)	1634-04-4	Methyl tert butyl ether	10	U J
(2)	156-60-5	trans-1,2-Dichloroethene	5	U
(2)	75-34-3	1,1-Dichloroethane	5	U
(2)	107-02-8	Acrolein	10	U
(2)	156-59-2	cis-1,2-Dichloroethene	5	U
(2)	78-93-3	2-Butanone (MEK)	5	U J
(2)	594-20-7	2,2-Dichloropropane	5	U
(2)	107-12-0	Proprionitrile	5	U
(2)	126-98-7	Methacrylonitrile	5	U
(2)	74-97-5	Bromochloromethane	5	U
(2)	67-66-3	Chloroform	5	U
(2)	71-55-6	1,1,1-Trichloroethane	5	20 J
(2)	563-58-6	1,1-Dichloropropene	5	U
(2)	56-23-5	Carbon tetrachloride	5	U J
(2)	107-06-2	1,2-Dichloroethane	5	U
(2)	71-43-2	Benzene	5	U
(2)	79-01-6	Trichloroethene	5	U
(2)	78-87-5	1,2-Dichloropropane	5	U
(2)	80-62-6	Methyl Methacrylate	5	U
(2)	123-91-1	1,4-Dioxane	5	U
(2)	74-95-3	Dibromomethane	5	U
(2)	78-83-1	Isobutyl Alcohol	10	U

11 Jun 97

TETRA TECH EM, INC.
11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123
ATTN: ART CURRIER

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11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
PO: O1LG-P0029

VOLATILE ORGANIC COMPOUNDS CAPILLARY COL
METHOD 8260IX
PAGE Two

SAMPLE ID: 023-06
LAB ID: 9912/5598-006

	CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/Kg	RESULTS µg/Kg
(2)	75-27-4	Bromodichloromethane	5	U
(2)	10061-02-6	trans-1,3-Dichloropropene	5	U J
(2)	108-10-1	4-Methyl-2-pentanone	10	U J
(2)	76-46-9	2-Nitropropane	10	U
(2)	108-88-3	Toluene	5	62 J
(2)	10061-01-5	cis-1,3-Dichloropropene	5	U J
(2)	97-63-2	Ethyl Methacrylate	5	U
(2)	79-00-5	1,1,2-Trichloroethane	5	U
(2)	127-18-4	Tetrachloroethene	5	U
(2)	142-28-9	1,3-Dichloropropane	5	U
(2)	591-78-6	2-Hexanone	10	U
(2)	124-48-1	Chlorodibromomethane	5	U J
(2)	106-93-4	1,2-Dibromoethane	5	U J
(2)	108-90-7	Chlorobenzene	5	U
(2)	630-20-6	1,1,1,2-Tetrachloroethane	5	U J
(2)	100-41-4	Ethylbenzene	5	3.3J
(2)	108-38-3	m&p-Xylene	5	8.6 J
(2)	95-47-6	o-Xylene	5	3.5J
(2)	100-42-5	Styrene	5	U
(2)	75-25-2	Bromoform	5	U J
(2)	98-82-8	Isopropylbenzene	5	U
(2)	79-34-5	1,1,2,2-Tetrachloroethane	5	U
(2)	108-86-1	Bromobenzene	5	U
(2)	110-57-6	trans-1,4-Dichloro-2-butene	5	U J
(2)	96-18-4	1,2,3-Trichloropropane	5	U
(2)	103-65-1	n-Propylbenzene	5	U
(2)	95-49-8	2-Chlorotoluene	5	U
(2)	108-67-8	1,3,5-Trimethylbenzene	5	U
(2)	106-43-4	4-Chlorotoluene	5	U
(2)	98-06-6	t-Butylbenzene	5	U
(2)	95-63-6	1,2,4-Trimethylbenzene	5	4.0J
(2)	135-98-8	sec-Butylbenzene	5	U
(2)	541-73-1	1,3-Dichlorobenzene	5	U J
(2)	99-87-6	p-Isopropyltoluene	5	U
(2)	106-46-7	1,4-Dichlorobenzene	5	U J
(2)	95-50-1	1,2-Dichlorobenzene	5	U J
(2)	104-51-8	n-Butylbenzene	5	U
(2)	96-12-8	1,2-Dibromo-3-chloropropane	5	U
(2)	120-82-1	1,2,4-Trichlorobenzene	5	U

HJ 11 Jun 01

TETRA TECH EM, INC.
11116 SOUTHTOWNE SQUARE, SUITE 303
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ATTN: ART CURRIER

ENVIROMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
PO: O1LG-P0029

VOLATILE ORGANIC COMPOUNDS CAPILLARY COL
METHOD 8260IX

SAMPLE ID: 023-06
LAB ID: 9912/5598-006

	CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/Kg	RESULTS µg/Kg
(2)	87-68-3	Hexachlorobutadiene	10	U
(2)	91-20-3	Naphthalene	10	U
(2)	87-61-6	1,2,3-Trichlorobenzene	5	U
(2)	110-75-8	2-Chloroethyl vinyl ether	10	U J

SURROGATE RECOVERY RESULTS

			% RECOVERY
(2)	460-00-4	4-Bromofluorobenzene	78
(2)	17060-07-0	1,2-Dichloroethane-d4	111
(2)	2037-26-5	Toluene-d8	91

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

DATE COLLECTED: 04/25/01 17:17
DATE RECEIVED: 04/27/01
DATE ANALYZED: 05/06/01
ANALYST: R.R

11 Jun 01

TETRA TECH EM. INC.
11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123
ATTN: ART CURRIER

ENVIROMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
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VOLATILE ORGANIC COMPOUNDS CAPILLARY COL
METHOD 8260IX
PAGE One

SAMPLE ID: 023-07
LAB ID: 9912/5598-007

	CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/Kg	RESULTS µg/Kg
(2)	75-71-8	Dichlorodifluoromethane	5	U
(2)	74-87-3	Chloromethane	10	U J
(2)	75-01-4	Vinyl chloride	5	U
(2)	74-83-9	Bromomethane	5	U J
(2)	75-00-3	Chloroethane	5	U
(2)	75-69-04	Trichlorofluoromethane	5	5.5 J
(2)	75-35-4	1,1-Dichloroethene	5	U
(2)	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	5	U
(2)	67-64-1	Acetone	20	36 J
(2)	108-05-4	Vinyl Acetate	10	U J
(2)	74-88-4	Methyl Iodide	5	U J
(2)	75-15-0	Carbon disulfide	10	U
(2)	107-05-1	Allyl Chloride	5	U
(2)	75-05-8	Acetonitrile	10	U
(2)	75-09-2	Methylene chloride	20	73 J
(2)	107-13-1	Acrylonitrile	10	U J
(2)	1634-04-4	Methyl tert butyl ether	10	U J
(2)	156-60-5	trans-1,2-Dichloroethene	5	U
(2)	75-34-3	1,1-Dichloroethane	5	U
(2)	107-02-8	Acrolein	10	U
(2)	156-59-2	cis-1,2-Dichloroethene	5	U
(2)	78-93-3	2-Butanone (MEK)	5	U J
(2)	594-20-7	2,2-Dichloropropane	5	U
(2)	107-12-0	Proprionitrile	5	U
(2)	126-98-7	Methacrylonitrile	5	U
(2)	74-97-5	Bromochloromethane	5	U
(2)	67-66-3	Chloroform	5	U
(2)	71-55-6	1,1,1-Trichloroethane	5	14 J
(2)	563-58-6	1,1-Dichloropropene	5	U
(2)	56-23-5	Carbon tetrachloride	5	U J
(2)	107-06-2	1,2-Dichloroethane	5	U
(2)	71-43-2	Benzene	5	U
(2)	79-01-6	Trichloroethene	5	U
(2)	78-87-5	1,2-Dichloropropane	5	U
(2)	80-62-6	Methyl Methacrylate	5	U
(2)	123-91-1	1,4-Dioxane	5	U
(2)	74-95-3	Dibromomethane	5	U
(2)	78-83-1	Isobutyl Alcohol	10	U

11 Jun 01

TETRA TECH EM, INC.
11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123
ATTN: ART CURRIER

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11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
PO: O1LG-P0029

VOLATILE ORGANIC COMPOUNDS CAPILLARY COL
METHOD 8260IX
PAGE Two

SAMPLE ID: 023-07
LAB ID: 9912/5598-007

	CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/Kg	RESULTS µg/Kg
(2)	75-27-4	Bromodichloromethane	5	U
(2)	10061-02-6	trans-1,3-Dichloropropene	5	U J
(2)	108-10-1	4-Methyl-2-pentanone	10	U J
(2)	76-46-9	2-Nitropropane	10	U
(2)	108-88-3	Toluene	5	60 J
(2)	10061-01-5	cis-1,3-Dichloropropene	5	U J
(2)	97-63-2	Ethyl Methacrylate	5	U
(2)	79-00-5	1,1,2-Trichloroethane	5	U
(2)	127-18-4	Tetrachloroethene	5	U
(2)	142-28-9	1,3-Dichloropropane	5	U
(2)	591-78-6	2-Hexanone	10	U
(2)	124-48-1	Chlorodibromomethane	5	U J
(2)	106-93-4	1,2-Dibromoethane	5	U J
(2)	108-90-7	Chlorobenzene	5	U
(2)	630-20-6	1,1,1,2-Tetrachloroethane	5	U J
(2)	100-41-4	Ethylbenzene	5	3.9J
(2)	108-38-3	m&p-Xylene	5	11 J
(2)	95-47-6	o-Xylene	5	4.5J
(2)	100-42-5	Styrene	5	U
(2)	75-25-2	Bromoform	5	U J
(2)	98-82-8	Isopropylbenzene	5	U
(2)	79-34-5	1,1,2,2-Tetrachloroethane	5	U
(2)	108-86-1	Bromobenzene	5	U
(2)	110-57-6	trans-1,4-Dichloro-2-butene	5	U J
(2)	96-18-4	1,2,3-Trichloropropane	5	U
(2)	103-65-1	n-Propylbenzene	5	U
(2)	95-49-8	2-Chlorotoluene	5	U
(2)	108-67-8	1,3,5-Trimethylbenzene	5	U
(2)	106-43-4	4-Chlorotoluene	5	U
(2)	98-06-6	t-Butylbenzene	5	U
(2)	95-63-6	1,2,4-Trimethylbenzene	5	5.8 J
(2)	135-98-8	sec-Butylbenzene	5	U
(2)	541-73-1	1,3-Dichlorobenzene	5	U J
(2)	99-87-6	p-Isopropyltoluene	5	U
(2)	106-46-7	1,4-Dichlorobenzene	5	U J
(2)	95-50-1	1,2-Dichlorobenzene	5	U J
(2)	104-51-8	n-Butylbenzene	5	U
(2)	96-12-8	1,2-Dibromo-3-chloropropane	5	U
(2)	120-82-1	1,2,4-Trichlorobenzene	5	U

11 Jan 01

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123
ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
PO: O1LG-P0029

VOLATILE ORGANIC COMPOUNDS CAPILLARY COL
METHOD 8260IX

SAMPLE ID: 023-07
LAB ID: 9912/5598-007

	CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/Kg	RESULTS µg/Kg
(2)	87-68-3	Hexachlorobutadiene	10	U
(2)	91-20-3	Naphthalene	10	U
(2)	87-61-6	1,2,3-Trichlorobenzene	5	U
(2)	110-75-8	2-Chloroethyl vinyl ether	10	U J

SURROGATE RECOVERY RESULTS

			% RECOVERY
(2)	460-00-4	4-Bromofluorobenzene	78
(2)	17060-07-0	1,2-Dichloroethane-d4	106
(2)	2037-26-5	Toluene-d8	88

U = UNDETECTED
B = PRESENT IN BLANK
J = DETECTED, BUT BELOW PRACTICAL QUANTITATION LIMIT

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ANALYST: R.R.

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ATTN: ART CURRIER

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
PO: O1LG-P0029

SEMIVOLATILE COMP. BY GC/MS CAPILLARY COLUMN

METHOD 8270
PAGE One

SAMPLE ID: 023-06
LAB ID: 9912/5598-006
PARENT ORDER NUMBER: 172843

QUANT FACTOR : 235.49

CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/KG	RESULTS µg/KG
110-86-1	Pyridine	11774	U
62-75-9	n-Nitrosodimethylamine	2355	U
62-53-3	Aniline	2355	U
111-44-4	Bis(2-chloroethyl)ether	2355	U
95-57-8	2-Chlorophenol	2355	U
108-95-2	Phenol	2355	U
541-73-1	1,3-Dichlorobenzene	2355	U
106-46-7	1,4-Dichlorobenzene	2355	U
95-50-1	1,2-Dichlorobenzene	2355	U
100-51-6	Benzyl alcohol	2355	U
108-60-1	2,2-oxybis(1-Chloropropane)	2355	U
95-48-7	2-Methylphenol	2355	U
67-72-1	Hexachloroethane	2355	U
621-64-7	N-Nitrosodi-n-propylamine	2355	U
106-44-5	4-Methylphenol	2355	U
98-95-3	Nitrobenzene	2355	U
78-59-1	Isophorone	2355	U
88-75-5	2-Nitrophenol	2355	U
105-67-9	2,4-Dimethylphenol	2355	U
111-91-1	Bis(2-chloroethoxy)methane	2355	U
120-83-2	2,4-Dichlorophenol	2355	U
120-82-1	1,2,4-Trichlorobenzene	2355	U
91-20-3	Naphthalene	2355	410J
65-85-0	Benzoic acid	2355	U
106-47-8	4-Chloroaniline	2355	U
87-68-3	Hexachlorobutadiene	2355	U
91-57-6	2-Methylnaphthalene	2355	440J
59-50-7	4-Chloro-3-methylphenol	2355	U
77-47-4	Hexachlorocyclopentadiene	2355	U
88-06-2	2,4,6-Trichlorophenol	2355	U
95-95-4	2,4,5-Trichlorophenol	2355	U
91-58-7	2-Chloronaphthalene	2355	U
88-74-4	2-Nitroaniline	2355	U
208-96-8	Acenaphthylene	2355	320J
131-11-3	Dimethyl phthalate	2355	U
606-20-2	2,6-Dinitrotoluene	2355	U
83-32-9	Acenaphthene	2355	U

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

ATTN: ART CURRIER

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
PO: O1LG-P0029

SEMIVOLATILE COMP. BY GC/MS CAPILLARY COLUMN
METHOD 8270
PAGE Two

SAMPLE ID: 023-06
LAB ID: 9912/5598-006
PARENT ORDER NUMBER: 172843

QUANT FACTOR : 0.00

CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/KG	RESULTS µg/KG
99-09-2	3-Nitroaniline	2355	U
51-28-5	2,4-Dinitrophenol	2355	U J
132-64-9	Dibenzofuran	2355	760J
121-14-2	2,4-Dinitrotoluene	2355	U
100-02-7	4-Nitrophenol	2355	U
86-73-7	Fluorene	2355	460J
7005-72-3	4-Chlorophenyl phenyl ether	2355	U
84-66-2	Diethyl phthalate	2355	U
100-01-6	4-Nitroaniline	2355	U
534-52-1	4,6-Dinitro-2-methylphenol	2355	U
86-30-6	N-Nitrosodiphenylamine	2355	U
103-33-3	Azobenzene (1,2-Diphenylhydrazine)	2355	U
101-55-3	4-Bromophenyl phenyl ether	2355	U
118-74-1	Hexachlorobenzene	2355	U
1912-24-9	Atrazine	2355	U
87-86-5	Pentachlorophenol	2355	U
85-01-8	Phenanthrene	2355	9100
120-12-7	Anthracene	2355	2200J
86-74-8	Carbazole	2355	880J
15972-60-8	Alachlor	2355	U
84-74-2	Di-n-butyl phthalate	2355	U
206-44-0	Fluoranthene	2355	8900
92-87-5	Benzidine	2355	U J
129-00-0	Pyrene	2355	7200
85-68-7	Butyl benzyl phthalate	2355	U
56-55-3	Benz(a)anthracene	2355	3300
218-01-9	Chrysene	2355	3500
91-94-1	3,3'-Dichlorobenzidine	2355	U
117-81-7	Bis(2-ethylhexyl)phthalate	2355	U
117-84-0	Di-n-octyl phthalate	2355	U
205-99-2	Benzo(b)fluoranthene	2355	3800
207-08-9	Benzo(k)fluoranthene	2355	1800J
50-32-8	Benzo(a)pyrene	2355	3200
193-39-5	Ideno(1,2,3-cd)pyrene	2355	960J
53-70-3	Dibenz(a,h)anthracene	2355	360J
191-24-2	Benzo(g,h,i)perylene	2355	940J

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

ATTN: ART CURRIER

INVOICE: 53994
PROJECT NO: G9009 L0104017, WESTERN FORGE
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SEMIVOLATILE COMP. BY GC/MS CAPILLARY COLUMN
METHOD 8270
PAGE Three

SAMPLE ID: 023-06
LAB ID: 9912/5598-006
PARENT ORDER NUMBER: 172843

QUANT FACTOR : 0.00

CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/KG	RESULTS µg/KG

SURROGATE RECOVERY RESULTS

		% RECOVERY
321-60-8	2-Fluorobiphenyl	120
367-12-4	2-Fluorophenol	73
4165-60-0	Nitrobenzene-d5	97
4165-62-2	Phenol-d5	83
1718-51-0	p-Terphenyl-d14	102
118-79-6	2,4,6-Tribromophenol	93

U = UNDETECTED
B = PRESENT IN BLANK
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ANALYST: J.K.

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ST. LOUIS, MO 63123

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

ATTN: ART CURRIER

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SEMIVOLATILE COMP. BY GC/MS CAPILLARY COLUMN
METHOD 8270
PAGE One

SAMPLE ID: 023-07
LAB ID: 9912/5598-007
PARENT ORDER NUMBER: 172848

QUANT FACTOR : 438.02

CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/KG	RESULTS µg/KG
110-86-1	Pyridine	21901	U
62-75-9	n-Nitrosodimethylamine	4380	U
62-53-3	Aniline	4380	U
111-44-4	Bis(2-chloroethyl)ether	4380	U
95-57-8	2-Chlorophenol	4380	U
108-95-2	Phenol	4380	U
541-73-1	1,3-Dichlorobenzene	4380	U
106-46-7	1,4-Dichlorobenzene	4380	U
95-50-1	1,2-Dichlorobenzene	4380	U
100-51-6	Benzyl alcohol	4380	U
108-60-1	2,2-oxybis(1-Chloropropane)	4380	U
95-48-7	2-Methylphenol	4380	U
67-72-1	Hexachloroethane	4380	U
621-64-7	N-Nitrosodi-n-propylamine	4380	U
106-44-5	4-Methylphenol	4380	U
98-95-3	Nitrobenzene	4380	U
78-59-1	Isophorone	4380	U
88-75-5	2-Nitrophenol	4380	U
105-67-9	2,4-Dimethylphenol	4380	U
111-91-1	Bis(2-chloroethoxy)methane	4380	U
120-83-2	2,4-Dichlorophenol	4380	U
120-82-1	1,2,4-Trichlorobenzene	4380	U
91-20-3	Naphthalene	4380	U
65-85-0	Benzoic acid	4380	U
106-47-8	4-Chloroaniline	4380	U
87-68-3	Hexachlorobutadiene	4380	U
91-57-6	2-Methylnaphthalene	4380	U
59-50-7	4-Chloro-3-methylphenol	4380	U
77-47-4	Hexachlorocyclopentadiene	4380	U
88-06-2	2,4,6-Trichlorophenol	4380	U
95-95-4	2,4,5-Trichlorophenol	4380	U
91-58-7	2-Chloronaphthalene	4380	U
88-74-4	2-Nitroaniline	4380	U
208-96-8	Acenaphthylene	4380	U
131-11-3	Dimethyl phthalate	4380	U
606-20-2	2,6-Dinitrotoluene	4380	U
83-32-9	Acenaphthene	4380	U

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ENVIRONMETRICS, INC.
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(314) 432-0550

ATTN: ART CURRIER

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SEMIVOLATILE COMP. BY GC/MS CAPILLARY COLUMN
METHOD 8270
PAGE Two

SAMPLE ID: 023-07
LAB ID: 9912/5598-007
PARENT ORDER NUMBER: 172848

QUANT FACTOR : 0.00

CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/KG	RESULTS µg/KG
99-09-2	3-Nitroaniline	4380	U
51-28-5	2,4-Dinitrophenol	4380	U J
132-64-9	Dibenzofuran	4380	U
121-14-2	2,4-Dinitrotoluene	4380	U
100-02-7	4-Nitrophenol	4380	U
86-73-7	Fluorene	4380	U
7005-72-3	4-Chlorophenyl phenyl ether	4380	U
84-66-2	Diethyl phthalate	4380	U
100-01-6	4-Nitroaniline	4380	U
534-52-1	4,6-Dinitro-2-methylphenol	4380	U
86-30-6	N-Nitrosodiphenylamine	4380	U
103-33-3	Azobenzene (1,2-Diphenylhydrazine)	4380	U
101-55-3	4-Bromophenyl phenyl ether	4380	U
118-74-1	Hexachlorobenzene	4380	U
1912-24-9	Atrazine	4380	U
87-86-5	Pentachlorophenol	4380	U
85-01-8	Phenanthrene	4380	4700
120-12-7	Anthracene	4380	1000J
86-74-8	Carbazole	4380	U
15972-60-8	Alachlor	4380	U
84-74-2	Di-n-butyl phthalate	4380	U
206-44-0	Fluoranthene	4380	4700
92-87-5	Benzidine	4380	U J
129-00-0	Pyrene	4380	4000J
85-68-7	Butyl benzyl phthalate	4380	U
56-55-3	Benz(a)anthracene	4380	1800J
218-01-9	Chrysene	4380	2000J
91-94-1	3,3'-Dichlorobenzidine	4380	U
117-81-7	Bis(2-ethylhexyl)phthalate	4380	U
117-84-0	Di-n-octyl phthalate	4380	U
205-99-2	Benzo(b)fluoranthene	4380	2100J
207-08-9	Benzo(k)fluoranthene	4380	1100J
50-32-8	Benzo(a)pyrene	4380	1700J
193-39-5	Ideno(1,2,3-cd)pyrene	4380	510J
53-70-3	Dibenz(a,h)anthracene	4380	U
191-24-2	Benzo(g,h,i)perylene	4380	500J

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11 Jun 01

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11116 SOUTHTOWNE SQUARE, SUITE 303
ST. LOUIS, MO 63123

ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

ATTN: ART CURRIER

INVOICE: 53994
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SEMIVOLATILE COMP. BY GC/MS CAPILLARY COLUMN
METHOD 8270
PAGE Three

SAMPLE ID: 023-07
LAB ID: 9912/5598-007
PARENT ORDER NUMBER: 172848

QUANT FACTOR : 0 00

CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/KG	RESULTS µg/KG

SURROGATE RECOVERY RESULTS

		% RECOVERY
321-60-8	2-Fluorobiphenyl	121
367-12-4	2-Fluorophenol	68
4165-60-0	Nitrobenzene-d5	99
4165-62-2	Phenol-d5	77
1718-51-0	p-Terphenyl-d14	107
118-79-6	2,4,6-Tribromophenol	83

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ENVIRONMETRICS, INC.
11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

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PCB
METHOD 8082
PAGE One

SAMPLE ID: 023-06
LAB ID: 9912/5598-006
PARENT ORDER NUMBER: 172843

QUANT FACTOR : 0 00

CAS NUMBER		PRACTICAL QUANTITATION LIMIT µg/KG	RESULTS µg/KG
12674-11-2	A-1016	39	U
1104-28-2	A-1221	39	U
11141-16-5	A-1232	39	U
53469-21-9	A-1242	39	U
12672-29-6	A-1248	39	U
11097-69-1	A-1254	39	U
11096-82-5	A-1260	39	U

SURROGATE RECOVERY RESULTS

		% RECOVERY
2051-24-3	Decachlorobiphenyl (DCB)	216
877-09-8	2,4,5,6-Tetrachloro-meta-xylene (TCMX)	71

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DATE COLLECTED: 04/25/01 17:17
DATE RECEIVED: 04/27/01
DATE ANALYZED: 05/10/01
ANALYST: J.K.

APPENDIX C

IDPH SITE INVESTIGATION DATA MAP

(One Sheet)

Second Phase - Site 133 - Western Forge Works